Competitiveness of the Cotton/Textile Cluster in Namibia

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Executive Summary

Cotton growing is a farming activity with the potential to provide significant incomes to farmers using small plots of land in regions where other cropping activities may not offer the prospects for adequate livelihoods and sustenance to poor rural farm families. Apparel manufacturing from imported fabrics and accessories can serve as an entry strategy into "value-adding" manufacturing activities (and possibly exporting) for countries at early stages of industrialization. Both of these economic activities have been supported by the governmental authorities in Namibia as developmental efforts directed at improving employment and earning opportunities for low income households.

In the case of cotton growing, the government has supported the development of new irrigation schemes in arable lands along the rivers that define the Northern border of Namibia. Some of these lands have been planted to cotton by small holders and some by larger scale commercial farmers that won tenders for the land use and water rights in these new (government supported) irrigation schemes. Additionally, some communal farming areas in the North (away from the river banks and the new irrigation schemes) have also been sown to cotton under rain-fed conditions in recent years. The Agricultural Bank of Namibia has supported both of these initiatives with credit arrangements to partially finance the seasonal growing costs. Furthermore, cotton has been traditionally grown by commercial farmers using water from wells in the Grootfontein area, which is about 200 kilometers south of the new irrigation schemes and the above mentioned communal farming areas in Kavango and Caprivi Regions. In these three types of farming enterprises Namibia produces about 6,000 Metric Tons of raw (seed) cotton or 10,000 bales of lint fibers. This volume of output is about one-hundredth of one percent of the world's output of cotton, reflecting both Namibia's size and its late entry into this commodity market.

The cotton grown in Namibia is transported nearly two thousand kilometers to a ginnery in South Africa where it is processed into lint for further conversion into yarns and fabrics in South Africa. This arrangement implies that Namibia foregoes about 40% of the value imbedded in its cotton. Part of the foregone value is represented by the cost of transporting seed cotton which contains lint fibers, seeds and a significant amount of trash. Regions with well developed cotton clusters tend to be characterized by the close proximity of gins to the growing areas, because the cost of transporting trash in raw cotton is significant. These economic facts have underpinned an effort by the government to foment the investment in a ginnery in Northern Namibia in order to capture the potential income and employment effects accruing from retaining such value in Namibia. The development of ginning in Namibia is also seen as a way of stimulating more cotton growing in areas with, apparently, few and low value alternative opportunities for the use of labor, land and water.

Currently, cotton production in Namibia generates about 1400 fulltime jobs with wage earnings at the prevailing wages of about $30 Namibian dollars per day. The business plan for the Namibian (future) ginning company estimates an increase in "value-added" accruing to Namibia of approximately two million US Dollars per year as a result of establishing the ginning operation and the concomitant expansion in cotton production which it is expected to induce.

This is also expected to create several thousand new jobs in northern Namibia in growing, harvesting, ginning and transporting cotton. Some of these activities are expected to also create opportunities for formation of new small and medium enterprises that would provide services to the expanded growing operations and to the ginnery itself. Cotton production in Namibia would need to at least double from present levels for the investment in the ginnery to be profitable.

At the same time that the government has been fomenting the expansion of the cotton growing cum ginning activities in Northern Namibia, the government has worked hard to attract new investments into textile manufacturing to provide employment to low skilled workers in urban areas. Namibia and other similarly situated countries have sought to attract investment into textile manufacturing, because in addition to the rural job creation from growing cotton on farms (and from the related rural support services), the downstream activities in processing and manufacturing would present opportunities for significant employment generation, as well.

The last stage in the cotton/textile value chain, apparel manufacturing, is a relatively labor intensive activity with labor representing approximately 20% of the product value at the factory gate. The Ministry of Trade and Industry has communicated its vision of Namibia's role in the global market for cotton fiber and apparel as a highly integrated cluster with strong forward and backward linkages among the firms, their markets, and the supporting foundations for the cluster. This vision has also been, in part, stimulated by the African Growth and Opportunity Act (AGOA) in the USA (passed by the United States Congress in 2000 as a component of the Trade and Development Act).

This report examines the prospects for the emergence of a fully integrated textile cluster in Namibia. The framework for the report is "competitiveness" as posited by Michael Porter (1990); the report is organized in accordance to the taxonomy of the factors that determine competitiveness of a business cluster. Specifically, the report examines the current structure of firms in the cluster, their productive factors, their position in markets, and the supporting cluster foundations, such as business associations, infrastructure, etc. that help determine the competitiveness of individual firms within the cluster. The report also examines the possibilities for forward linkages from the cotton growing firms to the apparel manufacturing firms through the stages of ginning, spinning, weaving, etc.

The backdrop for this assessment is given by the opportunities created by AGOA and the processes for regional integration of the Southern Africa Development Community (SADC) and the Common Market for East and Southern Africa (COMESA) of which Namibia is a participant. The report concludes with an assessment of the potential role for small and medium enterprises within the cluster under a scenario of the likely developments in cotton and textiles in Namibia within the next five years.

The work reported herein was undertaken by a team of analysts from Sigma One Corporation as part of the USAID funded program with the Ministry of Trade and Industry of the Government of Namibia, ***The Small and Medium Enterprise Competitiveness Enhancement Program (SMECEP)***. The purpose of the report is to provide guidance to the implementers of the program as to the opportunities for expanded business activity in the cluster by small and medium enterprises owned and managed by previously disenfranchised Namibians.

The field work was undertaken over a period of a month during May/June 2002, after which the analysis centered on an assessment of Namibia's competitiveness in the context of prevailing and emerging world and regional market conditions for cotton and for the products made from cotton fibers. The team of experts was led by Dr. David L. Franklin who served as the competitiveness analyst and senior writer of this report. Dr. Franklin has lifelong experience in cotton growing and ginning in Northwest Mexico as a cotton picker and as an investor in cotton farming operations. Other Sigma One Corporation staff that participated in the fact-finding and analyses were Dr. Edgar Ariza-Niño (an expert in cotton growing and marketing and in the economics of textile manufacturing), Mr. Edward Tarpinian (formerly with Sigma One Corporation and an expert in apparel manufacturing and marketing as a former global entrepreneur in the industry), Mr. Abrar Sattar (performed operational and financial analyses regarding cotton ginning in Namibia) and Ms. Leigh Anne Friesen (who served as an information consolidator and competitiveness analyst). Mr. Charles Omusana of the Uganda Investment Authority contributed to similar field work in Uganda in March, 2002 and in developing international benchmarks for production costs while in residence at Sigma One Corporation in Research Triangle Park North Carolina during May, 2002.

The team members gratefully acknowledge the collaboration of numerous Namibian officials and entrepreneurs with knowledge and expertise in Namibia's cotton/textile cluster, as well as specific consultations with faculty members at the School of Textiles at North Carolina State University, the Department of Entomology and the Maricopa Agricultural Research Center of the University of Arizona and the Cooperative Extension Service of the University of California-Riverside. We are particularly grateful to the farm families of Kavango Region and to numerous shop keepers throughout Namibia that trusted us with the realities of their livelihoods and their aspirations.

The principal findings are summarized as follows:

1. Notwithstanding the impetus given by AGOA and the investments by Ramatex and other international firms, the cotton/textile cluster is in an early stage of evolution in Namibia, and the backward and forward linkages have not yet formed in any significant manner. As a result of such weak intra-cluster linkages, firms tend to operate in isolation (enclaves) or at best are linked only partially to the other firms in the cluster and to the markets (domestic or international). There appear to be limited opportunities for participation by small and medium enterprises to provide support services to the firms in the cluster as it exists or is likely to evolve up to 2005, although there are numerous artisanal shops producing garments for tourists and for the local market that may benefit from firm specific assistance from the SMECEP.

2. Namibia's cotton/textile cluster is not well developed as a vertically integrated "value chain", because important linkages are missing and are likely to remain missing under the factor conditions for Namibia and the demand conditions for finished products in the global and regional market place. Essentially, the value chain from cotton production to apparel manufacturing has a missing middle, in that while cotton production on farms and apparel manufacturing in cut, make and trim operations appear to be internationally competitive given the prevailing low wages in Namibia, the intermediate stages of

spinning of yarns and knitting and weaving of fabrics are not likely to become competitive given the investment levels required and the scarcity of water in Namibia.

3. While cotton production under prevailing technologies in Namibia appears to be competitive in world commodity markets, even at today's (2002) historically low prices, Namibia's price competitiveness is the result of exceedingly low opportunity costs for factors of production, such as farm labor (low wages), land and water in the producing areas, along with low levels of technology, that are used currently in growing cotton in Namibia. These advantages could be short-lived, however, because cotton growing is notorious for its tendency to deplete soil fertility and its requirement for protection from insects. The Namibian authorities that control the allocation of irrigated lands and of water for irrigation need to carefully assess the economic and social merits of expanding cotton production in Namibia in contrast to other potential opportunities for using the land, labor, scarce water and scarce capital to be allocated to growing cotton in Northern Namibia. Another aspect that must be examined carefully by the authorities is the long-term environmental impact of developing an agricultural activity that is highly dependent on the use of chemical fertilizers and pesticides. The collateral damage to husbandry of other crop and animal species in the vicinity of cotton production can be quite deleterious as a result of the ecological impacts from the use of these products. Such assessments are outside the purview of this report.

4. The strategy of positioning Namibia in the upper-end market for knit and woven fabric apparel in the USA, under the provisions of AGOA, through "cut, make, and trim" operations such as Ramatex appears sound, given the foregoing investment and technological barriers to developing a fully integrated cluster with spinning and weaving operations based on domestic short staple cotton production. Higher value and quality items would enable the Namibian factory to pay higher wages. The cluster strategy should be to attempt to position Namibia at the higher end of the cut, make and trim segment, a la Singapore and Jamaica. The fabrics and accessories for these operations would all be imported from the firms' parent companies. Such business strategy is feasible for Namibia, because it has been granted privileges as a least developed country under the provisions of AGOA.

5. The issue for new entrants into "cut, make, and trim" operations, such as Namibia, is whether or not the social costs of any concessions to the CMT firms under the EPZ regimes will be paid back in the 2005 horizon when a more liberalized textile trading regime is expected after the expiration of the Multi Fibre Agreement (MFA), which governs world trade in textiles, currently. While there is great uncertainty about the success of the so-called "Doha Round" of negotiations and the form of the global textile market that will replace the MFA, highly competitive textile producers, such as Pakistan, India and China are reported to be preparing a rapid and major expansion of their productive capacity in expectation of a more "liberalized" trading regime for textiles after the expiration of the MFA. Such highly competitive global market conditions after 2005 would pose a major challenge to new entrants, such as Namibia in which the textile cluster is not yet fully structured or competitive.

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Introduction

The Namibia Investment Center at the Ministry of Trade and Industry considers the cotton and textile cluster a potentially profitable area of investment in Namibia, because economic activities in these areas present the opportunity to generate incomes in primary farm production of cotton fiber and in the downstream activities related to producing yarns, fabrics and apparel made from such fibers. The Ministry of Trade and Industry has communicated its vision of Namibia's role in the global market for cotton fiber and apparel as a highly integrated cluster with strong forward and backward linkages among the firms, their markets, and the supporting foundations for the cluster. This vision has been stimulated by the African Growth and Opportunity Act in the USA (passed by the United States Congress in 2000 as a component of the Trade and Development Act of 2000)[1].

A recent newsletter of the Namibia Investment Center quotes the Minister of Trade, "Already companies like the Malaysian textiles conglomerate, Ramatex, which invested US$100 million into an integrated textile and garment manufacturing plant in Windhoek, are taking advantage of the market access afforded under AGOA…Ramatex would not have set up here so fast were it not for (AGOA)." The vision of the Ministry of Trade and of the Investment Center includes the concept that under AGOA, Namibian small and medium enterprises will gain a foothold in the export market for apparel. Furthermore, the development of the cluster around large firms such as Ramatex is seen to offer the potential for other small and medium enterprises (SMEs) to serve the service and input needs of the larger firms. As such the realization of the Ministry's vision for the textile cluster would serve to fulfill the Ministry's policy for small and medium enterprise development.

Notwithstanding the impetus given by AGOA and the investments by Ramatex and other international firms, the cotton/textile cluster is in an early stage of evolution in Namibia, and the backward and forward linkages have not yet formed in any significant manner. As a result of weak intra-cluster linkages, firms tend to operate in isolation or at best are linked only partially to the other firms in the cluster and to the markets (domestic or international). For example, cotton is grown in Northern Namibia in commercial and communal farms under low levels of technology, and the cotton produced on these farms is exported as unprocessed cotton to be ginned and sold in South Africa. At the other end of the value chain, there are some manufacturing firms engaged in the production of apparel and non-apparel items made from imported fabrics and accessories. These firms operate as self contained enclaves, as is the case of Ramatex, or they are very small and serve a limited clientele in local markets. As yet, there are no firms engaged in the intermediate manufacturing steps of spinning of yarn, knitting or weaving of fabric from ginned cotton.

Only recently has a Namibian firm entered into a joint venture agreement with a USA firm to develop a cotton gin in Northern Namibia, and this enterprise will be dependent on the international commodity markets to sell its principal output-- lint cotton fibers in bulk bales of

[1] Under this law, the United States Government seeks to stimulate economic growth and job creation in eligible developing countries by granting "duty free" status to imports from eligible countries. This concession could mean a significant advantage for certain products from eligible countries, particularly apparel imports, which are governed by a system of quotas under the Multi-Fibre Agreement.

approximately 225 kilograms each. The exporting of ginned cotton in bulk bales into commodity markets would be required, because there are no thread or yarn-spinning operations in Namibia. At the present time the world commodity markets for cotton lint are depressed by an over-load of stocks, and lint cotton prices in international markets are at historical lows, yet Namibian cotton could be exported profitably at even such low prices.

In a more developed cotton/textile cluster, the cluster linkages would connect cotton production firms (farms) to ginning[2], spinning, weaving, knitting and fabric processing firms (apparel and non-apparel manufacturing), and these latter into domestic, regional and international markets. Such highly integrated clusters exist in China, Pakistan and India (among others), because these countries have advantages in cotton growing, in processing and manufacturing infrastructures and in plentiful skilled labor at low costs. These countries are major players in the global market place for textile products that use cotton fibers as an input. Other countries have fewer advantages, but are located near to the largest market for final products. For example, a group of countries in Latin America and the Caribbean are the major exporters into the USA.

Traditionally, cotton was grown in warm climates with heavy and predictable rainfall or with irrigation and was subsequently transported long distances in bales of lint to the processing mills, e.g. over one hundred years ago cotton grown along the Nile River in Egypt and the Sudan was exported to the mills in Manchester, England, and cotton from the US Southeast was transported to England prior to the US Civil War and at a later epoch to mills in New England in the USA's Northeast. Textile clusters have tended to form as vertically integrated systems in more recent times, as manufacturing facilities were located nearer to the cotton growing areas. In the case of the USA, textile manufacturing moved south to the growing areas primarily to capitalize on low cost labor and low cost electrical energy[3], rather than to save on transport costs for lint cotton. In other parts of the world, integrated cotton/textile clusters were formed during the import-substitution era (1950-1980) as countries attempted to capture the additional value from manufacturing of final products based on their cotton growing capacity (e.g. East Africa).

During more recent times, there has been a tendency for globalization of the value chain from cotton growing to final apparel and finished products made from fabrics of cotton or cotton/synthetic blends. For example, the United States is now a major exporter of lint cotton, thread, and fabric, but the largest importer of finished products. Other countries, notably Singapore and some Caribbean countries, produce only final products from imported fabrics and accessories without producing a single bale of cotton. Highly integrated clusters have persisted in large countries with multiple advantages regarding costs, labor and technology. Countries, such as China, Pakistan and India, are in this category, and other countries where capacity was installed during the import substitution era, e.g. Egypt, Kenya, Uganda have continued to produce fabrics and apparel for their domestic markets and for exporting into global markets.

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[2] Cotton producing farms would also need backward support linkages for seeds, fertilizer, implements, and integrated crop protection services, as well as harvesting and farm to market transportation.

[3] During the "Great Depression" the USA invested in a major hydro-electric system (The Tennessee Valley Authority) that increased irrigation and provided low cost electrical energy throughout the Tennessee Valley and the Mississippi Delta. This, together with low cost labor, greatly enhanced the competitiveness of a highly integrated cotton/textile cluster throughout the southeastern region of the United States, and to this day this region represents the major producer of cotton and textiles in the United States

The international flows of cotton and textile products made with cotton (and other fibers) are directly influenced by an international trading arrangement known as the Multi-Fibre Agreement (MFA). The MFA evolved as a result of attempts by developed countries (the USA and Europe, primarily) to protect their mature textile industries from low cost competition from developing countries. The MFA operates through a system of quotas for specified products to be exported from producing countries into specific importing countries. "Out of quota" imports usually face very high tariffs in each of the importing countries (forty percent or more, into the USA). These quota arrangements have driven vertically integrated producers from the large exporting countries in Asia and elsewhere (countries that have met their quotas but still have excess capacity to export) to seek alternative production venues in developing countries that are not fulfilling their quota allocations or which have been granted privileged access into one or more of the large importing countries, e.g. to the USA under AGOA and the Caribbean Basin Initiative or into the European Union under the Lomé Convention for African, Caribbean and Pacific Countries.

The process of Asian firms seeking alternative export platforms for their excess exporting capacity in their home countries was underway for a number of years before AGOA, but AGOA has given it impetus within African countries. As a result, there has been increased output from installed capacity in countries that had developed their textile industry during the import substitution era, e.g. Kenya and Uganda. In Southern Africa, South Africa and Lesotho had developed capacity as an import substituting strategy and as a way for South Africa to cope with anti-apartheid sanctions on trade, prior to the political liberation of Southern Africa. These African countries have expanded output rapidly in response to AGOA. At the same time, these and other countries in Africa, such as Namibia, are experiencing new investment from Asian companies seeking to expand their imports into the USA under AGOA by using eligible African countries as production platforms for textile products for the USA market. The investments that have been made have generally been focused on apparel assembly from imported fabrics, rather than into vertically integrated operations from cotton growing to spinning, knitting, weaving and apparel manufacturing.

In this context, Namibia and other similarly situated countries have sought to attract investment into the textile cluster, because in addition to the rural job creation from growing cotton on farms (and from the related rural support services), the downstream activities in processing and manufacturing would present opportunities for significant employment generation, as well. The last stage in the cotton/textile value chain, apparel manufacturing is a relatively labor intensive activity with labor representing approximately 20% of the product value at the factory gate.

This report examines the prospects for the emergence of a fully integrated textile cluster in Namibia. The framework for the report is "competitiveness" as posited by Michael Porter (1990)[4]. The report is organized in accordance to the taxonomy of the factors that determine competitiveness of a business cluster ("The Porter Diamond"). Specifically, the report examines the current ***structure and strategies of firms in the cluster***, their ***productive factors***, their ***position in markets (demand factors),*** and the ***supporting cluster foundations***, such as business associations, infrastructure, etc. that help determine the competitiveness of individual firms

[4] Michael Porter (1990), *The Competitiveness of Nations,* The Free Press, Glencoe, Illinois

within the cluster. The report also examines the possibilities for forward linkages from the cotton growing firms to the apparel manufacturing firms through the stages of ginning, spinning, weaving, etc. Each of these stages is considered independently, and the findings are subsequently integrated in the context of the cluster foundations for the over-all value chain.

The backdrop for this assessment is given by the opportunities created by AGOA and the processes for regional integration of the Southern Africa Development Community (SADC) and the Common Market for East and Southern Africa of which Namibia is a participant. The report examines the international competitiveness of cotton production and ginning in Namibia and establishes international bench marks for judging the potential competitiveness of downstream activities as envisioned by the Ministry of Trade and Industry. The report concludes with an assessment of the potential role for small and medium enterprises within the cluster under a scenario of the likely developments in cotton and textiles within the next five years.

Apparel Assembly: An Entry Strategy into Manufacturing in Poor Countries

Apparel production (from imported fabrics) for export markets has been a traditional entry strategy for low income countries wishing to increase participation in international markets, because the labor required can be low skilled and the capital investments are not major, relative to turnover. In fact, it was this concept of apparel and textile processing as a job creation and entry strategy into manufacturing for exporting that motivated the provisions for "textiles" in the African Growth and Opportunity Act (AGOA), a law enacted in the United States Congress to give preferential treatment to exports from African countries (including apparel and other textile products) into the USA marketplace[5].

As such, AGOA has created an opportunity for African countries to produce apparel and non-apparel textile items ("textiles") from African and USA fabrics to be exported "duty-free" into the USA without the quota limitations of the international multi-fibre agreement (MFA), which governs textile imports into the United States. This provision of AGOA gives a competitive advantage to qualified African countries over countries that have access to the USA textile market under the tariffs in the generalized system of preferences (GSP) or are over their quotas in the MFA.

The duty free status of African textile imports into the United States could mean as much as a forty percent tariff advantage for eligible African countries over other textile exporting countries that have export capacity in excess of the quotas under the MFA. This privileged access to USA textile markets for eligible African countries was structured as a temporary opportunity by the authors of AGOA, because the MFA is expected to be negotiated into a 'free trading" arrangement for the world market for textiles at its expiration in 2005. The original AGOA legislation was also due to expire in 2005, but recently approved legislation in the USA has extended its provisions until 2008. This extension is popularly known as AGOA II, and African countries are now lobbying for AGOA III. The value of such an extension to African countries would depend a lot on the progress of the Doha Round within the World Trade Organization. These negotiations have created the expectation that tariffs on imports from developing countries

[5] U.S. Congressman Jim Mc Dermott, principal author of AGOA, personal communication, Chapel Hill, NC, June 1997.

will be lower and made uniform across broad categories of goods, and that quota systems and other non-tariff barriers to trade will be eliminated. Thus, any advantages under AGOA should continue to be seen as temporary and countries should judge their competitiveness in the context of a more liberalized global trading system after 2005.

The value to African countries of the privileges under AGOA and its extensions past 2005 will depend crucially on what trade regime evolves for textiles after the expiration of the MFA. Namibia and other countries without a major existing textile manufacturing capacity have seen AGOA as an opportunity to develop such capacity as a precursor to a more open international system of trading in textiles after 2005. The temporary privileges granted to African countries under AGOA are expected to create opportunities for firms within these countries to invest in manufacturing capacity, develop a skilled work force, and to develop the ability to identify and meet market demands under the preferential and temporary conditions so as to become fully competitive under a more open trading regime for textile products post-2005.

Some Namibia-based firms have responded to these emerging (and to some existing opportunities) in various manners. At the primary end, there has been an expansion of cotton growing on Namibian farms; there is the joint-venture to develop a cotton ginnery; and at the finished products end, there are several manufacturing plants in operation. Some of these manufacturing plants are producing specialized garments for the domestic and regional markets, e.g. school children's and police/military uniforms, and other recent developments include investments in factories for the assembly (cut, make and trim) of garments from imported cloth and accessories for subsequent export to USA under AGOA.

Additionally, there are numerous small businesses involved in making garments and apparel from imported fabrics and material for sale locally to Namibian consumers and to tourists. Some of these latter enterprises have a strong artisanal vocation, rather than a formal "manufacturing" orientation. The small and medium enterprises in the apparel and textile "manufacturing" activities tend to operate in a "made-to-order" mode and in relatively small quantities. Even the more sophisticated firms in this segment of the cluster manufacture their products on the basis of specific orders from their customers, e.g. workers' uniforms for individual factories and businesses, civil and military services, schools and sports' teams. The production runs for these factories are often less than a hundred units, whereas, large manufacturing units, such as Ramatex, require continuous production runs in the millions of units, annually.

The following sections consider specific segments of the value chain in the cotton/textile cluster in Namibia. Where appropriate, an assessment is made of the competitiveness of that particular segment in the context of the "Porter Diamond".

Cotton Production in Namibia

Namibia produces a very small proportion of the world's supply of cotton, approximately one-hundredth of a percent of the world's annual output of cotton. World production of cotton fibers (ex-ginnery) amounts to 90 million bales, which is equivalent to 20 million metric tons of ginned cotton or 50 million metric tons of seed cotton at the farm gate. Current production of cotton on Namibian farms amounts to approximately ten thousand bales (2,250 metric tons) of cotton fiber

(lint cotton) or approximately 6,000 tons of seed cotton at the farm gate[6]. Currently, all cotton grown on Namibian farms is exported by a single firm to South Africa where it is ginned and processed into yarn and fabric. That is, Namibian cotton is exported in a totally unprocessed form directly from the farms as "seed cotton".

The first step of processing cotton after harvesting from the farm is to separate usable fibers (lint) from seeds and trash (such as residues of the bolls and other parts of the cotton plant, which were harvested along with the lint). This process is known as "ginning", and is done by machinery in plants known as Gins or Ginneries. Gins are usually located in the vicinity of farms and cotton farms tend to cluster around gins, because the greater the distance between the farm and the gin, the greater the expense of transporting byproducts that will be discarded as trash or would be used in the proximity of the farms (seeds and their derivatives)[7]. Since this process is currently undertaken in South Africa, the Namibian economy is foregoing approximately 40% of the value represented by lint cotton and the further elaboration within Namibia of the usable by-products from cotton seeds. Approximately a fourth of the foregone value is the cost of transporting seed cotton to RSA, which is deducted from the prices paid to Namibian farmers by the South African buyer. The Namibian economy could capture these sources of incomes and jobs if Namibian enterprises could undertake the process of ginning competitively, and if Namibian farmers could grow more seed cotton competitively on Namibian farms.

Cotton seeds are a by-product of ginning cotton and could be used to produce edible vegetable oil and protein rich feed supplements for cattle, poultry and swine production. Namibia already has a highly developed beef industry and development is underway in other species of livestock for meat production. There would, thus, appear to be *future* opportunities to develop the cotton cluster by linking it to the food processing cluster via the use of the cotton seeds as inputs for edible oils and animal feeds once one or more gins are well established in Namibia. At the present time the seeds are exported to South Africa imbedded in the raw cotton.

The topic of whether a cotton seed processing industry would emerge is not considered within this report, for the following reasons. Edible oils and processed animal feeds are currently imported from South Africa, except that some traditional edible oils are extracted from native plants under very rustic conditions for sale and consumption in local markets. It would be very risky to invest in a processing plant for edible cotton seed oil and cotton seed cake for animal feed based on the potential availability of cotton seeds as by-products of ginning until the new ginnery is well established. Even if such an activity were to evolve in the near-term as a "cluster-linkage" to the ginnery, it would probably emerge as a relatively large scale operation to process in excess of 5000 metric tons of cotton seed. The most likely investor in such an activity is a well established firm such as Namib Mills, the major importer and processor of basic grains in Namibia. They would have an advantage in blending by-products of their on-going processing of

[6] The difference between the farm gate weight of seed cotton and the ginned weight of lint cotton is made up of seeds and trash; salable fibers represent approximately 40% of the weight at the farm gate, seeds represent 45% and trash represents the remaining 15%.

[7] Although cotton seeds are used as planting material for the next crop, most cotton seeds are processed into edible oils and as a protein supplement for animal feeds. Thus, the "cotton" cluster in most countries usually includes gins, oil extracting factories and animal feed mixers/producers, as well as textile mills.

food and feed grains with the cotton seed cake to make animal feeds with cotton seed cake as the source of proteins.

Significantly, Namibian farmers can grow seed cotton competitively, i.e., at costs that are sufficiently low to enable Namibian cotton lint to be sold in international commodity markets even at the current very low prices that prevail in world markets. In recent years, world production of cotton fiber has exceeded demand so that there is a large overhang of approximately 45 million bales in stocks, of which the USA, the world's largest exporter of lint cotton, holds 7.6 million bales in stock. The worldwide holdings of cotton in stocks is equal to half of the quantity used annually and **1½** times the quantities traded in world markets, annually[8]. These conditions have led to historically low world prices. In the 2000/2001 harvest season international lint prices averaged 41.85 US cents per pound, the lowest in 30 years. Prices are expected to rise modestly to about fifty cents per pound of lint for the 2002/2003 planting/harvesting cycle, because yields are expected to be lower on plantings of 32 million hectares worldwide. Yet, even at these very low world prices, Namibian farmers can produce cotton competitively, because at current exchange rates (approximately N$10/USD), Namibian farmers can produce cotton at costs equivalent to US $0.17 per pound of lint for commercial farmers using irrigation and at $0.34 per pound of lint for small holders and communal farmers producing seed cotton under rain fed conditions in northern Namibia. The expected world prices given by the USA July 2003 "futures" in the range of 50 to 52 US cents per pound of lint are sufficiently high for traditional farmers to obtain modest profits using low technology production methods under rain-fed conditions in northern Namibia. In fact, cotton productivity and competitiveness compares favorably with Uganda, and Uganda has more favorable ecological conditions and a long tradition of producing high quality cotton.

While cotton production under prevailing technologies in Namibia appears to be competitive in world commodity markets, even at today's historically low prices, Namibia's price competitiveness is the result of exceedingly low opportunity costs for factors of production, such as, farm labor (low wages), land and water in the producing areas, along with low levels of technology, that are used currently in growing cotton in Namibia. These advantages could be short-lived, however, because cotton growing is notorious for its tendency to deplete soil fertility and its requirement for protection from insects[9]. As cotton growing matures as an economic activity in the producing areas, farmers will be faced with the need to increase the use of purchased inputs—fertilizers, insecticides and pesticides. This will tend to drive cotton production into irrigated areas where commercial farmers currently operate and away from communal rain-fed farms, because the increased use of purchased inputs will require higher yields in terms of output per area of land used in production, and these higher yields can only be obtained (consistently) under irrigated conditions. Such intensification of production will probably also lead to the mechanization of a greater number of the tasks involved in growing cotton. Such a transition may lead to higher incomes for farmers, but may not lead to expanded employment of low skilled workers.

[8] If the USA and other stock-holding countries were to release their stocks, there would be a total collapse of the international market for lint cotton.

[9] Cotton growing around the world is the single largest user of insecticides.

The Namibian authorities that control the allocation of irrigated lands and of water for irrigation need to carefully assess the economic and social merits of expanding cotton production in Namibia in contrast to other potential opportunities for using the land, labor, scarce water and scarce capital to be allocated to growing cotton in Northern Namibia. Another aspect that must be examined carefully by the authorities is the long-term environmental impact of developing an agricultural activity that is highly dependent on the use of chemical fertilizers and pesticides. The collateral damage to husbandry of other crop and animal species in the vicinity of cotton production can be quite deleterious. Such assessments are outside the purview of this report.

Competitiveness Assessment of Cotton Production in Northern Namibia

The following is a summary of the competitiveness assessment of cotton growing in Northern Namibia within the framework of the "Porter Diamond":

- ***Firms' structure, strategy and competitive environment*** is dualistic in that cotton is grown under two land-use regimes—commercial farmers with access to irrigation and communal farmers under rain-fed conditions. Commercial farmers account for most of the cotton produced in Namibia with approximately 600 hectares under irrigation producing enough seed cotton for approximately four thousand bales of lint cotton. This segment represents a few enterprises in the Grootfontein area and a handful of growers in new irrigated schemes along the border with Angola. Commercial growers obtain profits of nearly N$7,000 per hectare under prevailing market conditions for seed cotton and the inputs used to produce it. Communal growers have only recently been organized, and about 700 families produce cotton under rain-fed and low technology conditions on about 1200 hectares of land. The output from these communal farms is about 1300 bales of lint equivalent in seed cotton, and the families derive profits of about N$800 (US $80 dollars) per hectare, on individual plots of three hectares or less.

  The cotton growing segment of the cluster evolved around the commercial farmers and their links to the South African firm that buys all of their seed cotton. Only recently have government programs supported the entry of communal farms into the market by providing credit and extension services to enable communal farmers to grow seed cotton for sale to the single buyer from South Africa. There is essentially no competition at the present, and the South African buying firm that is represented in Namibia by one of the commercial farmers appears willing to buy all seed cotton from communal growers at the same prices that it pays the commercial farmers (approximately US30 cents per kilogram of raw seed cotton during the 2002 harvest season).

- ***Related and supporting industries*** (cluster foundations) for cotton growing in Namibia are weak; services to commercial farmers are provided primarily by agents of the single buying company, and communal farmers depend on government services. The Agribank of Namibia provides loans for communal farmers to finance their purchase of inputs (seeds, fertilizers, pesticides, and burlap bags for picking of cotton in the field). These loans cover about half of the cash costs needed for purchased inputs under the low technology conditions used on communal farms. Farmers must rely on their own resources or on supplier credits to finance the rest of their inputs. Seeds are obtained from the South African cotton buyer, and other inputs

are obtained at rural shops (pharmacies, etc.) where farming inputs are a sideline to other retailing activities. As a result of these conditions of low technology use and limited access to finance, yields and profits are low. Cotton production provides about two person months of wages per hectare at the prevailing minimum wage in Namibia. Families engaged in rain-fed production of cotton must, therefore, rely on other sources of income for their complete sustenance. There are weak mechanisms available through government entities, communal organizations and local Non-governmental Organizations (NGOs) that attempt to promote profitable collaboration in infrastructure, information and product/service standardization among the communal farmers and their input and credit suppliers. Collaboration among the commercial and communal farmers is minimal, except that one commercial farmer serves as an agent of the buying company, and through him, the communal farmers have access to seeds for planting and limited access to other inputs. In many countries, the ginnery is the principal source of inputs, services and credit to the cotton farmers, and these functions will undoubtedly emerge as elements of the new ginners' business activities as they seek to increase the sowing of cotton and to secure supplies of seed cotton to be processed in their gin.

- ***Factor conditions*** among the communal farmers are rustic at best. Their principal factors are their time, land and rainfall. If planting does not occur on a timely basis to take advantage of the limited and short-lived rainy season, yields will be very low. Some farmers have been known to abandon their fields when they perceive that yields will be minimal. At the present time, there appears to be little potential for innovation under the rain-fed conditions, because rainfall patterns make cotton growing a very risky affair. Inadequate or poorly timed rains would mean that investments in seeds, land preparation and fertilizers could be easily lost. Farmers, therefore, use minimum inputs to reduce the risk of large financial losses. At present, there are no institutional mechanisms for spreading the risks, and the system operates at a very low level of technology and factor productivity, e.g. the low returns to labor effort. Furthermore, if the area planted to cotton under rain-fed conditions in Northern Namibia were to continue to expand, the production regions would experience significant increases in the population of insect pests and insect-borne plant diseases. These conditions would require increased use of pesticides and sophisticated management systems for their correct application. There is currently no effective system for improving managerial and workers' skills required to apply these more sophisticated techniques. Nor are there adequate structures for improving access to capital, information (knowledge) and high quality inputs. The government, through the Ministry of Agriculture and through Agribank is attempting to fill this gap, but their efforts are insufficient to support a significant transformation to higher levels of productivity among communal farmers. In countries with well developed cotton textile clusters, such services are provided by effective public/private partnerships in which the ginning companies play a major role in providing inputs, information and credit. The most productive farms for cotton production are in arid or semi-arid regions with well developed irrigation systems, such as Arizona in the USA, Northwest Mexico, the Nile Valley and the Punjab in South Asia. Such foundations do not yet exist in Namibia, and Namibia's advantages in cotton growing appear to depend on cheap labor and newly cleared lands under rain fed conditions or on the newly established irrigation schemes along the border.

- ***Demand conditions*** for Namibian cotton are currently determined by the sole buyer from South Africa that pays farmers a reasonable price given world market conditions and the cost of

transporting seed cotton to South Africa. Overall the market conditions are determined by the global market place in which prices are, to a large extent, the result of the persistent surplus conditions in the USA, which subsidizes USA production substantially through the loan programs of the USA's governmental Commodity Credit Corporation. Globally, the typical arrangements are for farmers to receive one-third of the FOB price received by the ginning company for lint cotton. This price is determined in reference to spot prices in the world market for cottons of specific qualities (purity, fiber strength, and staple length). Usually, payment is made to the farmers after the cotton is ginned and graded for quality as function of actual prices received by the ginnery for the specific lot delivered by each farmer (the ginnery retains the seed for its own use or for re-sale). Even under highly depressed world market conditions, cotton production in Namibia appears cost-competitive at prevailing prices, and the South African buyer seems to be willing to procure as much seed cotton as Namibian farmers are willing to produce at these prices.

Ginning of Cotton in Namibia

At the present time there are no ginning facilities within Namibia and currently all seed cotton produced on Namibian farms is transported to a ginnery in South Africa. Recently a Namibian firm entered into a joint venture agreement with an American firm to install a gin in northern Namibia near to the farming areas. The ginnery is expected to be operational for the 2003 harvesting season. Such an enterprise would benefit from a US $20/bale cost advantage in saved transportation costs relative to the shipment of seed cotton to South Africa. The expected operating costs for the Namibian gin are higher than comparable gins in USA or Uganda, but are sufficiently low that the enterprise would be profitable at prevailing world prices for lint cotton and cotton seed if it can achieve volumes in excess of 10,000 bales of lint cotton per year.

The installation of the gin in northern Namibia will create a capacity to process approximately 25,000 bales of lint cotton annually, which is more than three times the current total output of cotton in Namibia[10]. With the savings in transportation costs relative to the South African company that currently purchases seed cotton in Namibia, the Namibian ginning company should be able to offer higher prices to Namibian growers of cotton than those they would receive from the South African buyer. This would induce some expansion of output of cotton in Namibia. Whether the three-fold expansion of output required to assure the ginning company of profitability could be expected is a question outside the scope of this assessment. Such an expansion implies drawing in about three thousand additional hectares of rain fed production and perhaps one thousand additional small holder farmers into cotton growing in Northern Namibia, unless the expansion occurs primarily on larger scale commercial irrigated farms. In the latter case, an additional 1000 hectares would have to be placed in production under irrigated conditions. The new ginning company has stated as its strategy that it will seek to work with all farmers and be especially proactive in supporting the expansion and development of rain-fed communal farms into higher productivity enterprises.

[10] This report did not consider the possibility that in the future cotton could be grown in Angola and brought to the new gin in Northern Namibia for sale and processing. At the time of the field work, the pacification of Southern Angola was in very early stages so no consideration was given to this possibility. The trading activities in the border regions seemed to be uni-directional with Namibia serving as a transhipment point for South African-made consumer goods.

The business plan for the Namibian ginning company estimates an increase in value added accruing to Namibia of approximately two million US Dollars per year as a result of establishing the ginning operation. This is also expected to create several thousand new jobs in northern Namibia in growing, harvesting, ginning and transporting cotton. Some of these activities will create opportunities for formation of new small and medium enterprises within this cluster. The business strategy of the ginning company centers on developing rain fed cotton farming in communal settings without irrigation as the best route to achieve sustainable cotton farming in Northern Namibia. Irrigated cotton farming requires advanced technology and training to apply the technology, primarily the timely application of chemicals in the correct doses. The organizers of the ginning company believe that it would require extensive hands-on training and continuous on-farm assistance and high public and private investment to establish irrigated farming of cotton as a sustainable activity in Namibia. Finally, irrigated farming typically leads to massive pest infestation problems in cotton production. Pest management is the most critical aspect of cotton growing and it is significantly more manageable with rain-fed production and communal settings where individual families looking after small plots of cotton are better able to assess the need to apply the corrective measures to control insect pests in a timely and effective manner.

Prospects for Spinning, Knitting and Weaving Factories in Namibia

Cotton yarns represent 53% of fibers used in the production of apparel world wide, and cotton yarns are also used extensively for home accessories (towels, bedding, etc.) and for other industrial uses. Spinning of cotton yarn from raw cotton fibers is a capital intensive process. Economies of scale for *modern* plants to produce yarn imply a through-put of 80 to 200 thousand bales of lint cotton per year per plant[11]. There is currently a lot of installed capacity for making yarn in older plants throughout the developing world, and these plants can and do operate at smaller scales. Additionally, many modern plants are vertically integrated to manufacture fabric from lint cotton (and other fibers), and they are highly automated and operate at relatively large scale (processing 200,000 bales of cotton lint per year or more). The investment requirement for such a modern plant to process cotton lint and synthetic fibers into fabric can exceed 100 million US Dollars[12], although smaller plants (using older technologies and operating at smaller scales, e.g. 20,000 bales) can be purchased throughout Africa for less than 15 million US Dollars, *in situ*. A rustic yarn (only) plant could be acquired for less than five million dollars in nearby African countries. These factors imply that other African countries with installed weaving and spinning capacity, which is based on strong linkages to a substantial cotton growing base and tradition, such as Uganda, would have significant cost advantages over a new spinning and weaving industry in Namibia.

[11] Such scales of operation imply that even a modestly sized Namibian factory to spin and weave yarn and fabric from cotton fibers would have to import the vast majority of its cotton lint, because even under optimistic scenarios Namibian cotton output would not exceed 25thousand bales of lint, and all this would be primarily short staple (less desirable) cotton fibers.

[12] Dahmoush, Ariza-Niño, Siddik, and Gleason (2001), ***Cost of Production and Competitiveness of Spinning Yarns in Egypt***, Agricultural Policy Reform Program Ministry of Agriculture, Cairo

Quality Standards for Yarns and Fabrics Made from Cotton Fibers

Yarn qualities are measured in part by "The English Count System" which is related to the "fineness" of the threads (yarn). Coarse yarns (English Count: Ne=7) are used for denim, yarns of Ne equal to 20 to 30 are used for t-shirts and knitted children's apparel, yarns of Ne=40 for dress shirts and fine yarns (Ne=80) for delicate articles, such as a woman's dressy blouse.

Coarse yarns are spun from short staple cotton fibers (Ne<10), medium staple fibers are used to make yarns up to Ne=40, while longer staple fibers are used for higher quality cloth. Other quality characteristics of cotton yarns include strength and blend ratio with synthetic fibers, primarily polyester. Modern plants typically must include the capacity to produce blends as well as 100% cotton yarns. There is a general trend toward cotton polyester blends, although 100% cotton apparel is sold at the lower end and the upper end of the market. Because Namibian grown cotton consists primarily of short staple fibers, a spinning and weaving industry in Namibia would have to rely heavily on cotton lint imports from other countries for medium and longer staple cotton fibers and for synthetic fibers.

Spinning of yarns and thread from cotton fibers consists of the following steps: cleaning of the lint cotton, blending of cottons of different grades or origins to achieve a uniform product, carding, drawing, combing, roving (a thinning process to produce fine yarn), and ring spinning of yarn into cones. Cones of yarn are subsequently woven into cloth or sold to other firms that will use them for knitting or weaving of fabrics. Modern spinning plants typically must include the capacity to produce blends as well as 100% cotton yarns. The manufacturing of cloth from yarn involves bleaching and dyeing with harsh chemicals and these processes are intensive in the use of water and produce toxic effluents which must be properly handled. All these factors mitigate adversely against the emergence of a major spinning and weaving segment in the cotton/textile cluster in Namibia, given the scarcity of water resources, the predominance of short staple cotton in domestic production and the need to import most of the fibers needed (longer staple cotton and synthetics).

Additionally, there are numerous international competitive factors that further mitigate against the emergence of a spinning and weaving segment in the textile cluster in Namibia. East African countries with installed capacity in cotton production, ginning, spinning and weaving are facing difficulty in competing with low cost fabric producers such as India and Pakistan. A new industry in Namibia with its start-up costs and its reliance on imported fibers would face difficulty in competing with other African countries, let alone traditional low cost producers such as India (see table below).

Cost of Production for One Kilogram of Cloth Made from Cotton Fibers

	Coarse Yarns	*Medium Yarns*	*Fine Yarns*
USA Bench Mark Prices	**$ 2.60**	**$ 3.60**	**$ 6.80**
Egyptian Bench Mark	**$ 2.10**	**$ 2.78**	**$ 3.94**
Indian Bench Mark	**$ 1.90**	**$ 1.96**	

Source: Dahmoush, Ariza-Niño, Siddik, and Gleason (2001), ***Cost of Production and Competitiveness of Spinning Yarns in Egypt***, Agricultural Policy Reform Program Ministry of Agriculture, Cairo, Egypt.

For example, comparable Ugandan costs for cloth made from coarse and medium yarns spun locally range from about US$3.37/kg to US$3.78/kg of finished fabric[13]. Even with Uganda's AGOA tariff advantage (approximately 40%), India is more competitive than Uganda. Namibia's new spinning operations would have to surpass Ugandan producers in cost competitiveness. To achieve that, Namibia's technology would need to be near the "state-of-the-art" to produce high quality yarns, and those conditions would require very large investments, large production runs, high volumes of raw materials, and large volumes of clean water. None of these requirements are currently available in Namibia.

The Competitiveness of Apparel Manufacturing in Namibia

This section discusses the United States import market for cotton apparel, because this is the central focus for expansion of textile development in Namibia in response to the opportunities presented by AGOA. The USA market for imported textile fabric products consists of fabrics made from natural and man-made (synthetic) fibers, and these two broad classes of fabrics are used as apparel and for non-apparel items. The total USA import market for textile products made from fibers amount to the equivalent of 33-35 billion square meters of fabric under the Multi-fibre Agreement (MFA), of which approximately half is used for apparel. The value of apparel and other textile products imported into the USA exceeds $100 Billion US Dollars, annually. Cotton apparel represents approximately 60% of the volume of all manufactured apparel imported into the USA under the MFA; this is approximately nine billion square meters of fabric equivalent. Other natural fibers account for less than 10% of apparel imports, e.g. silk and wool, and increasingly apparel is made from blends of natural fibers and man-made fibers, e.g. cotton and synthetics. Furthermore, there is an emerging segment consisting of non-fiber synthetic materials used for special apparel and other applications, e.g. fire retardant uniforms[14]. These latter are made primarily in the USA with high-technology manufacturing plants.

Approximately 25% of the USA's apparel imports made from cotton fibers represents intimate clothing (underwear, pajamas, dressing gowns, etc.), another 25% (approximately) represents knit outerwear; and other outerwear products made from woven fabrics represent the balance (half) of the cotton apparel imported into the USA market. Fabrics using cotton yarns and blended cotton/synthetic yarns represent the bulk of cotton apparel imported into the United States under the Multi-fibre Agreement. Other natural fibers such as silk and wool account for about ten percent of the imported fabric items in the USA.

Cotton-based apparel imports into the USA are dominated by the USA's near neighbors in the Caribbean Basin and Mexico. The Caribbean Basin countries import into the United States under the privileges granted to them by the Caribbean Basin Initiative (CBI) and by the Trade and Development Act of 2000 (the formal name for AGOA, since the law includes duty free privileges for textiles from the Caribbean Countries, as well as African countries). Given their

[13] The Uganda Investment Authority generously provided access to detailed cost of production information for several textile mills in Uganda.

[14] The trend toward increase use of synthetic materials is in part responsible for the downward pressure on cotton prices, and modern textile manufacturing facilities need the capacity to process blends of cotton and synthetic (human-made) fibre products.

proximity to the USA, the CBI countries are the major source of imports and account for 28% of apparel imports into the USA under the MFA. Mexico imports into the USA under the provisions of the North American Free Trade Agreement (NAFTA) and accounts for 14% of apparel imports into the USA. The member countries of the Association of South East Asian Nations (ASEAN), as a group, match Mexico in volume (approximately 14% of MFA imports into USA), and within these Malaysia accounts for 1% of total cotton-based apparel imports into the USA. Other major sources of cotton apparel imports into the USA are China with 4% of the total MFA cotton apparel imports into USA, as well as, Pakistan and India (each with 3%) and Sri Lanka with 2%. The developed (OECD) countries (other than Japan and Mexico) account for 7% of imports whereas, all of Sub-Saharan Africa accounts for less than 2% of the imports into the USA under the multi-fibre agreement. Japan and many low volume countries account for the rest.

Within Africa, the major exporters to USA under the provisions of AGOA are Mauritius, Lesotho, Madagascar, South Africa, Swaziland, and Kenya. AGOA exports of apparel into the USA from these countries have expanded to nearly 500 million US Dollars annually. With the exception of Mauritius and South Africa, these African countries export apparel (to the USA), which has been made from fabric produced outside of Africa or the USA under special provisions in AGOA for lesser developed developing countries. These provisions allow apparel firms in lesser developed developing countries to import fabric from countries outside Africa and the USA for manufacturing of apparel in what are known as cut, make and trim (CMT) operations. These factories use domestic labor and foreign fabric to produce apparel for export to USA.

There has been a significant upsurge in CMT operations in sub-Saharan African countries eligible for AGOA, because the investment levels for such operations are relatively low and investment "pay-back" periods for such operations are short, i.e. within three years. The equipment used in these factories is easily transportable, and this helps mitigate the risks involved in locating in any particular country, particularly if the equipment is entered into the country under a duty-free status such as an EPZ. All these conditions contribute to the ease with which a foreign firm can "pick-up-and-go", if conditions in a particular country prove to be less favorable than other countries. Furthermore, there are few constraints to plant size (economies of scale) as the principal equipment used consists of sewing machines and fabric cutting tables. In fact, in some instances, the "foreign" fabric used in these operations is shipped already cut to patterns and the only activity undertaken in the African factory is sewing and trimming of the apparel.

Under these conditions, textile manufacturers have found significant advantages for setting up CMT operations within the Export Processing Zone (EPZ) regimes of countries eligible for AGOA as least-developed developing countries. The EPZ regimes allow for the importation of sewing machines and related equipment under duty free conditions, along with the pre-cut fabric. In some countries the EPZ regimes, also, offer attractive tax holidays and financing guarantees for the investments made by the "foreign" investor. In such circumstances, the host country bears the bulk of the risk for the new industry. The foreign investors can quickly set up CMT operations in African countries eligible for the least developed country provisions of the Trade and Development Act of 2000. With these relatively low cost and low risk investments the CMT

operations in Africa can import fabric from their home countries (or elsewhere outside Africa) to produce finished apparel for export into the USA under AGOA. With the low investment and low risk exposure in the EPZ's of the eligible African countries, these operations can offer an adequate return on investment by 2005 when the MFA is due to expire.

The issue for new entrants, such as Namibia, is whether or not the social costs of any concessions to these firms under the EPZ regimes will be paid back, as well, in the 2005 horizon, or if the installed capacity and the labor force will develop the capability to compete in a more liberalized textile trading regime after the expiration of the MFA. While there is great uncertainty about the success of the so-called "Doha Round" of negotiations and the form of the global textile market that will replace the MFA, highly competitive textile producers, such as Pakistan, India and China are reported to be preparing a rapid and major expansion of their productive capacity in expectation of a more "liberalized" trading regime for textiles after the expiration of the MFA. Such highly competitive global market conditions after 2005 would pose a major challenge to new entrants, such as Namibia in which the textile cluster is not yet fully structured or competitive.

The Namibian authorities lobbied the United States Government, successfully, to be considered in the category of lesser developed developing countries for purposes of AGOA to enable a cut make and trim industry to develop within Namibia. With such a favorable determination under the USA Trade and Development Act of 2002, Namibia is eligible for the special provisions that enable Namibian-based firms to manufacture apparel from non-USA and non-African fabric sources and to export the output to the USA under the duty-free provisions of AGOA. Several cut, make and trim operations have been established in Namibia for the purpose of manufacturing apparel for exporting to the USA.

The most notable example is the Malaysian owned Ramatex, which currently operates as a cut, make and trim (CMT) operation that imports all cloth and accessories from off-shore to manufacture apparel for the USA market under the provisions of AGOA. They make apparel based on order requirements established by the parent company. They cut, assemble (sew) and trim fabric and accessories into finished and packaged apparel for shipment to USA. They currently are pilot testing the feasibility of making yarn from lint cotton and have stated plans to become a vertically integrated manufacturing operation by spinning yarn, weaving grey goods, printing and then using fabric to produce apparel in their cut, make and trim (CMT) operation, as well as using yarn in knitting mills for making apparel. Their plans call for investments in excess of 100 million US Dollars for two knitting mills, two spinning mills and two dyeing mills along with four garment factories. They expect to eventually employ in excess of 10,000 workers[15]. Other garment producers have announced plans to establish plants in Namibia, and they include Rhino Garments and Tai Wah Garments, from Malaysia and Taiwan, respectively. These investments are seen as important in Namibia's vision of developing a textile cluster.

[15] "Namibia is Ramatex's Choice", ***Invest Develop,*** Namibian Investment Centre, June 7, 2002.

Knitting of apparel from yarn is also a relatively low cost entry strategy for countries seeking to develop their textile industry. Knitting operations require lower levels of investment and can be focused at relatively low cost products, e.g. t-shirts and underwear. Knitting mills in other African countries, e.g. Uganda can produce t-shirts at a unit cost of $1 to $2 US Dollars. Such products can be produced for export or for sale in local and regional markets; whereas apparel made from cut fabric is made to the quality standards of a specific market. That is, apparel made for the quality standards, sizes, and styles required by the USA market would not be easily sold in local and regional markets, unless deeply discounted in price. Thus from a "cluster" perspective, knitting of apparel is the most likely entry approach for local and regional markets, and cut, make and trim (CMT) operations are the approach for developing the textile cluster around an export-based strategy, i.e. responding to AGOA opportunities in the USA.

Retail Price Point USA	*Cost/unit FOB*	*Unit Labor Content*	*Wages/ Container*
$ 10.00	$ 2.99	$ 0.60	**$ 796**
$ 15.00	$ 4.64	$ 0.93	**$ 1,236**
$ 20.00	$ 6.29	$ 1.26	**$ 1,676**
$ 25.00	$ 7.94	$ 1.59	**$ 2,116**
$ 30.00	$ 9.59	$ 1.92	**$ 2,556**
$ 40.00	$ 12.89	$ 2.58	**$ 3,436**
$ 50.00	$ 16.19	$ 3.24	**$ 4,316**
$ 60.00	$ 19.49	$ 3.90	**$ 5,195**

Value of Wages Paid to Workers per Container of Items Exported from Cut Make and Trim Operations in Relation to Retail Value of Items in USA Stores

(All values in USA Dollars; Calculations by Sigma One Corporation)

A strategy of positioning Namibia in the upper-end market (price points at or above $25 per unit at retail) for knit and woven fabric apparel in the USA through "cut, make, and trim" operations such as Ramatex would appear to be a sound approach, given the foregoing investment and technological barriers to developing a fully integrated cluster with spinning and weaving operations based on domestic short staple cotton production. The adjoining table presents the value to Namibia in terms of wages and jobs from seeking such a high value/quality position in the USA apparel market. The adjoining table depicts the increase in labor content (under CMT conditions) in one container of apparel shipped from Namibia to the USA as a function of the retail price point for the USA market. Higher value and quality items would enable the Namibian factory to pay higher wages per unit as depicted in the table. Clearly, the cluster strategy should be to attempt to position Namibia at the higher end of the cut, make and trim segment, a la Singapore and Jamaica. The skill levels and expertise of Namibian workers is such that the firms are likely to begin operations around the $25 dollar price point and gradually move up as skills (and quality) improve. The ultimate positioning of Namibian products will be a function of the development of skills among Namibian workers and of the global market conditions after the MFA ends in 2005.

This potential for job creation in CMT operations is borne out by the experience of Lesotho that has increased exports to the USA by 50% under AGOA and created forty thousand new jobs in the process. Each of those jobs represents annual wages in excess of four hundred US Dollars per worker at approximately two US dollars per day worked. In Kenya, a new Pakistani-owned firm has set up a plant to export over three million garments annually to the USA and has created over

one thousand new jobs. The successes are not uniform, however, as in Tanzania and Mozambique the textile cluster is not flourishing, because the installed capacity is oriented to import substituting rather than exporting as a result of historical protectionists policies for garment manufacturing in each of these countries. Textile manufacturing remains a venture with high entrepreneurial risk and the prospects for success are particular to the specific conditions in each country.

Namibia's advantages under AGOA are primarily related to its being considered as a "least" developed developing country for purposes of the Trade Act. This enables the CMT operations to process non-African and non-US fabric into apparel. Namibia is not unique in this aspect; other African countries qualify for these considerations as well. Other countries have favorable EPZ regimes as well, though Namibia's policy stance appears to be more business friendly, particularly to outside investors. This aspect gives it advantages over most West African countries and some of the East African countries. Some of the latter, however, have the advantage of installed capacity and more experienced workers, such as Kenya and Uganda. Similar conditions apply to Lesotho and Swaziland. Investors from Asia have selected Namibia as one of their African platforms in response to proactive investment promotion efforts, a generous EPZ regime, and as prudent portfolio diversification across several source-countries.

Competitiveness Assessment of Apparel Manufacturing in Namibia

Namibia's cotton/textile cluster is not well developed as a vertically integrated "value chain", because important linkages are missing and are likely to remain missing under the factor conditions for Namibia and the demand conditions for finished products in the global and regional market place. Essentially, the value chain from cotton production to apparel manufacturing has a missing middle, in that while cotton production on farms and apparel manufacturing in cut, make and trim operations appear to be internationally competitive given the prevailing low wages in Namibia, the intermediate stages of spinning of yarns and knitting and weaving of fabrics are not likely to become competitive given the investment levels required and the scarcity of water in Namibia. The following is thus an assessment of competitiveness of the Apparel Manufacturing segment in Namibia, using the same Porter Diamond framework as was used to summarize the competitiveness of cotton production in an earlier section of this report.

- ***Firms' structure, strategy and competitive environment*** for apparel manufacturing in Namibia is determined primarily by the role new firms are playing in using Namibia as an export platform into the USA apparel market under AGOA. There are a handful of recent entrants beginning operations under the country's generous concessions to investors under its EPZ regime. One of these is reasonably well established in its first year of operations as a cut, make, and trim (CMT) enterprise (Ramatex). These firms are owned, primarily, by Asian-based multinational corporations and were established as a means for expanding the presence of their parent companies in the USA market for apparel. These companies will compete with each other for workers in Namibia and for markets abroad through the agency of their parent companies. Their strategy appears to be based on the existence of AGOA concessions to African countries that qualify, as does Namibia, for the concessions for least-developed countries under AGOA. This allows them to import fabric from outside Africa and

the US for final assembly into apparel in Namibia and subsequent export to the USA. As stated earlier, the investment levels are modest by global standards in the industry, and the payback periods fall within the AGOA and MFA horizons (2005).

There are two other small elements in the apparel segment of the cluster—artisanal-level enterprises that manufacture clothes on order for the local population and for tourists and a few more formal enterprises engaged in the manufacture of specialty apparel in small production runs. The first of these, the artisanal shops, are often part of a local retail shop and make African costumes for local buyers' use for festive occasions and as tourist souvenirs. These firms operate at low turn-over levels on a "made-to-order" basis and rely primarily on word of mouth for their clientele. These shops use stylish fabrics, such as tie-dyed material and kente cloth that are imported from other African countries. These artisanal enterprises are considered to be within the handicrafts cluster rather than the cotton/textile cluster. The other element manufactures school uniforms, apparel items for sports' teams, and specialty apparel for military, police and fire-fighting brigades. The production runs for these are contracted with specific clients to meet their specific needs. Some of these firms have been able to export some of these products to similar clients in neighboring countries under SACU, SADC, and COMESA trading arrangements[16]. The prospects for expansion for these two is tied to the prospects for overall growth in the local and regional economies, whereas, the prospects for growth in the cut make and trim operations are linked to the continuing existence of the MFA and AGOA arrangements.

- ***The supporting cluster foundations*** for the apparel manufacturing segment of the cotton/textile cluster are limited to the logistics advantages of Namibia's ports and transport infrastructure and to the advantages granted by the EPZ regime for the CMT operations such as Ramatex. Each of the firms operates very much as an enclave and almost all inputs are imported through the parent companies. The managers of these firms indicate that they would be willing to acquire more goods and services from Namibian sources, but currently most of what is available is not cost-competitive in that most items, such as packaging materials, are imported in small lots from South Africa and are subject to the VAT regime under SACU rules. The CMT firms find it advantageous to import such items along with their fabrics and accessories through their parent companies in container lots. These imports of inputs and related materials enter under the duty and VAT exonerations of the EPZ regime. The principal services procured within Namibia will remain those associated with the work force of low-skilled operators of the sewing machines and cutting tables. These services could include transportation, cafeteria services, and health and workers welfare services. There appears to be little scope for backward and forward linkages with these firms and other Namibian enterprises, of any scale.

  There is also little scope for promoting profitable collaboration in infrastructure, information and product/service standardization, or through public-private dialogue for the other types of firms in the segment. Most of the artisanal shops operate in isolation from the others, except that they tend to "cluster" in each others vicinity as a reflection of their low scale of

[16] The major firm in this activity is owned by a South African parent company based in Durban.

interconnectedness with markets beyond the local market[17]. The other type of shops are located in the industrial zones of Windhoek, and some are little more than warehouses for imported products from South Africa, and the local value added may consist of final trimming or of applying of patterns, labels or embroidering of logotypes.

- ***Factor conditions*** for all type of firms in the cluster provide scant potential for innovation or for improving managerial and workers skills, as they all rely on simple technologies (cutting tables, sewing machines and fabric pressing equipment) and relatively low skilled labor. Some of the artisanal producers are skilled with their hands and have the potential for producing very high quality products on a "one-of-a kind" basis, but cannot consistently fulfill orders for larger production runs. Their lack of access to larger markets or to capital to finance expansion and a low-skilled work force maintains them at low scales of operation. As a result they lack information (knowledge) and high quality inputs to serve markets in which their products could fetch higher prices. A typical problem for artisanal producers that attempt to increase their scale of operations is that they lose control over the quality of their products and they fail to obtain repeat orders. A prospect that remains is that as more workers are trained in sewing and cutting techniques by the large CMT operators, some of these better trained workers will return to their local areas or neighborhoods to offer their skills as workers in the smaller shops or as entrepreneurs.

- ***Demand conditions*** for the larger CMT operations are given by the marketing arrangements made by the parent companies with their buyers in the USA. Demand conditions for the artisanal element are determined by bargaining and probably in reference to what similar items imported from South Africa may fetch in more formal retail shops of the larger cities. The third element, the contract-oriented apparel producers (uniforms), operate in an institutional market determined by government tendering, primarily, in relation to comparable imports from South Africa. The prospects for expanding market presence for these firms is through expansion into the institutional markets of neighboring countries such as Angola and the Democratic Republic of the Congo where such industries are even less well developed than in Namibia. Currently, Namibia serves primarily as a transshipment point for these finished products that are imported duty-free from South Africa under the provisions of the Southern Africa Customs Union and then exported into Angola through the northern cities and towns. It would be a matter of substantial analysis of firm-level data for the current producers of uniforms in Namibia to determine whether they can produce at lower costs than the landed value of South African imports. The size of the market would not seem to warrant such analyses at this writing, and it is questionable that the Namibia enterprises have the sufficient scale to compete with the South African sources. The market for these products exists primarily in response to government tendering and the requirement that the products be produced in Namibia. Absent this aspect, this segment of the market would probably be even smaller.

  The market for apparel in the USA is highly stratified by quality and brand identity. Mass retailers such as Wal-Mart, K-mart, Target Stores, TJ Maxx, etc. operate at the lower end of

[17] Hotelling's "Ice Cream Vendor Theorem" (circa 1936) suggests that vendors such as these will tend to cluster together in the path of customers' flows in order to maintain market share; for these reasons artisanal markets tend to be agglomerations of vendors of similar or related products.

the market for apparel and each represent thousands of retail outlets with large volumes of customers. Only the largest multi-national suppliers can meet the production volumes and uniformity of quality required by these buyers. Typically these companies obtain most of their apparel products from large producers, such as China, India and Mexico. As an example of the volumes required, consider the case of men's dress shirts for Wal-Mart, the world's largest retailer, which has over 10,000 stores in the USA alone. Each style and color combination requires up to 40 sizes; for three colors and one style, the shelf space required would be for 120 dozen shirts per store. Such stores operate on high turnover of inventory, e.g. 20 turns per year. So that one style of shirt in three colors would require an annual flow of 2400 dozen shirts for each store. With 10,000 stores, Wal-Mart would require 288,000,000 (nearly 300 million) units of this item alone. Men's shirts at Wal-Mart sell for as little as ten dollars per unit, and a Namibia factory worker would have to make (cut, make and trim) a minimum of five such shirts in a day to earn the currently prevailing minimum wage.

The high-end of the apparel market is made up of numerous up-scale retailers, such as Nordstrom's, Neiman-Marcus, Saks Fifth Avenue, etc. These firms operate with a strong brand identity and seek high quality sources for their apparel offerings. Nordstrom's volumes for men's shirts would be in the order of a few hundred thousand units annually, but men's shirts at Nordstrom's sell in the range of $75 to $100 US Dollars per unit. These types of retailers are very selective in sourcing of apparel products and maintain very strict quality standards. Apparel for these types of retailers is made in the USA, Europe, Mexico, Hong Kong and Singapore, because only firms in these countries can consistently meet the quality standards they require.

There are numerous other retailers that fill the middle of the market with lower volumes than Wal-Mart and lower quality requirements than Nordstrom's. The comparable price points for men's shirts at these establishments would be in the range of $25 to $ 50 US Dollars per unit.

The best entry strategy for Namibia's CMT operations would be to attempt to serve the intermediate market in the $25 US Dollar price point range. At this level, each unit would contain about US$1.60 of value added by labor services (wages and workers' perquisites) per unit. Production runs as contemplated by Ramatex would imply increases in value added accruing to Namibia in excess of fifty million US Dollars per year to generate the 10,000 full time jobs they expect to generate in Namibia. As skills developed among Namibian workers in CMT operations it would be desirable to move up into higher price points where the labor content per unit of output is greater. This strategy would be determined by the parent companies in Asia as they would not want to displace current sources of higher value production in their Asian plants, unless they are forced into such a strategy by the new global trading arrangements that will emerge after 2005.

Summary of Findings

The principal findings are summarized as follows:

1. The cotton/textile cluster is in an early stage of evolution in Namibia, and the backward and forward linkages have not yet formed in any significant manner. As a result of such weak intra-cluster linkages, firms tend to operate in isolation (enclaves) or at best are linked only partially to the other firms in the cluster and to the markets (domestic or international). There appear to be limited opportunities for participation by small and medium enterprises to provide support services to the firms in the cluster as it exists or is likely to evolve up to 2005, although there are numerous artisanal shops producing garments for tourists and for the local market that may benefit from firm specific assistance from the SMECEP.

2. Namibia's cotton/textile cluster is not well developed as a vertically integrated "value chain", because important linkages are missing and are likely to remain missing under the factor conditions for Namibia and the demand conditions for finished products in the global and regional market place. Essentially, the value chain from cotton production to apparel manufacturing has a missing middle, in that while cotton production on farms and apparel manufacturing in cut, make and trim operations appear to be internationally competitive given the prevailing low wages in Namibia, the intermediate stages of spinning of yarns and knitting and weaving of fabrics are not likely to become competitive given the high investment levels required, the lack of raw materials and the scarcity of water in Namibia.

3. While cotton production under prevailing technologies in Namibia appears to be competitive in world commodity markets, even at today's historically low prices, Namibia's price competitiveness is the result of exceedingly low opportunity costs for factors of production, such as, farm labor (low wages), land and water in the producing areas, along with low levels of technology, that are used currently in growing cotton in Namibia. These advantages could be short-lived, however, because cotton growing is notorious for its tendency to deplete soil fertility and its requirement for protection from insects. The Namibian authorities that control the allocation of irrigated lands and of water for irrigation need to carefully assess the economic and social merits of expanding cotton production in Namibia in contrast to other potential opportunities for using the land, labor, scarce water and scarce capital to be allocated to growing cotton in Northern Namibia. Another aspect that must be examined carefully by the authorities is the long-term environmental impact of developing an agricultural activity that is highly dependent on the use of chemical fertilizers and pesticides. The collateral damage to husbandry of other crop and animal species in the vicinity of cotton production can be quite deleterious as a result of the ecological impacts from the use of these products. Such assessments are outside the purview of this report.

4. The strategy of positioning Namibia in the upper-end market for knit and woven fabric apparel in the USA, under the provisions of AGOA, through "cut, make, and

trim" operations such as Ramatex appears sound, given the foregoing investment and technological barriers to developing a fully integrated cluster with spinning and weaving operations based on domestic short staple cotton production. The cluster strategy should attempt to position Namibia at the higher end of the cut, make and trim segment, a la Singapore and Jamaica. The fabrics and accessories for these operations would all be imported from the firms' parent companies. Such a business strategy is feasible for Namibia, because it has been granted privileges as a least developed country under the provisions of AGOA.

5. The issue for new entrants into "cut, make, and trim" operations, such as Namibia, is whether or not the social costs of any concessions to the CMT firms under the EPZ regimes will be paid back in the 2005 horizon when a more liberalized textile trading regime is expected after the expiration of the Multi Fibre Agreement (MFA). While there is great uncertainty about the success of the so-called "Doha Round" of negotiations and the form of the global textile market that will replace the MFA, highly competitive textile producers, such as Pakistan, India and China are reported to be preparing a rapid and major expansion of their productive capacity. Such highly competitive global market conditions after 2005 would pose a major challenge to Namibia, because the textile cluster is not yet fully structured or competitive.